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506 West Burnside Road, Victoria, B.C. V8Z IM5

MID-SEASON SUMMARY OF

FOREST PEST CONDITIONS

IN BRITISH COLUMBIA & YUKON

JULY 1982

E.V. Morris and G.A. Van Sickle

This summary has been compiled from reports and observations submitted by Forest Insect and Disease Survey Rangers up to mid-July and highlights pest conditions which are of concern to forest managers or being highly visual, attract questions from the public.

A generally cold winter in the interior of the province caused some bark beetle mortality but did not reduce populations sufficiently to have a major impact on the mountain pine beetle and spruce bark beetle populations which remain at the epidemic levels of the past several years.

Warm dry weather prevailed over most of the province during early summer and may influence the buildup of certain defoliator populations in the interior of the province.

Foliage diseases on conifers have been reported from several areas in southern British Columbia.

The status of many pests has not been fully determined yet, but these will be reported in more detail in the fall when aerial and ground surveys have been completed.

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Pine Pests

Mountain pine beetle
Dendroctonus ponderosae

Overwintering larval population assessments in mountain pine beetle infestations primarily in lodgepole pine stands generally indicated continuing infestations in 1982. Some levelling off of infestations from overwintering mortality, woodpecker predation and reduction of susceptible host material is evident in parts of most regions. The severe 1981 attack is now becoming more evident with the fading of foliage on the attacked trees and the expansion and intensification of many existing infestations will be apparent.

In the Cariboo Region, overwintering larval mortality averaged 47% (range 0 to 100%) with the highest mortality occurring at Tatlayoko, Tatla, Long and Vert lakes and Big Creek. Predictions at 14 localities showed five areas with increasing populations, seven decreasing and two static.

In the Nelson Region, examinations in the Lussier River-Whiteswan Lake area and at Kootenay National Park indicate an increasing population trend with little overwintering mortality. However, just south of Kootenay Park in the Cross-Kootenay-Palliser river areas, brood assessments indicate a decline in population levels and overwintering mortality ranged between 8 and 30%.

In the Kamloops Region, in the Carpenter Lake-Goldbridge, Lillooet, Pavilion and Kamloops areas, population levels appear to be static. Pitchouts were evident on up to 35% of the 1981-attacked stems. Failure of parent adults to establish galleries was recorded on up to 10% of the trees and progeny development failure in up to 50% of the trees. However, sufficient numbers of beetle progeny survived in and adjacent to major outbreaks and further tree mortality will occur in 1982. In the South Kamloops District, overwintering brood assessments at Ashnola River, Mission-Belgo creeks and Summers Creek, where moderate to severe infestations occurred in 1981, indicate continuing infestations in 1982.

Overwintering broods fared well at Kispiox and Suskwa in the Prince Rupert Region, and based on "R" value predictions, populations are expected to increase. However, in the Harold Price Creek area, broods were small and mortality was 50%, indicating a decreasing population, but considering the extent of this infestation, it should continue in 1982.

In the Vancouver Region, the small infestation in lodgepole pine at Eastgate in Manning Park has been cut and the infested trees removed.

Lodgepole pine dwarf mistletoe
Arceuthobium americanum

West of Tatla Lake in the Cariboo Region, 40% of the lodgepole pine regeneration was infected at One Eye Lake and at McClinchy River reached 73%. Further surveys are planned to assess levels of mistletoe remaining after bark beetle-infested stands have been logged.

Red band needle disease
Dothistroma pini

This needle blight which causes reddening and premature loss of foliage has caused moderate to severe discoloration of pines in the Nelson Region. Western white pine was the most severely affected, with up to 100% of the foliage affected, particularly in the lower crowns of immature trees. Conspicuous discoloration occurred near Hills, Summit Lake, Lemon Creek and Vallican in the Slocan Valley, around Salmo and near Rock Creek. In the East Kootenay, up to 30% of the year-old needles were affected on immature and mature ponderosa pine between Jaffray, Elko, Baynes Lake and Grasmere. Symptoms were also found between Cranbrook and Teepee Creek and along Gold Creek Road, where 20% of the lodgepole pine had 20% of the foliage infected. Several collections also included *Leptomelanconium cinereum* and *Lophodermella concolor*.

A pine needle cast
Lophodermella concolor

Localized infections of needle cast occurred on 50 to 100% of the 1981 needles on lodgepole pine regeneration on 1 000 ha along Tranquille Creek in the Kamloops Region.

Lodgepole pine regeneration was moderately infected near Lac La Hache, and in a spaced stand near Quesnel, about half the foliage was affected.

Immature lodgepole pine stands along the Bull River between Quinn and Galbraith creeks in the Nelson Region had 20% of the 1981 needles infected on 40% of the trees.

Needle cast was common on lodgepole pine throughout the Yukon Territory, particularly along the Alaska Highway in the Watson Lake area.

Elytroderma needle disease
Elytroderma deformans

From 5 to 100% of the previous year's needles were infected in patches throughout the host range of ponderosa and lodgepole pines in the Kamloops Region. Brooms caused by successive years of infection are often on up to 85% of infected trees.

In the Nelson Region, this needle disease is causing discoloration of 1981 growth on both lodgepole and ponderosa pines. It is most prominent on lodgepole pine in the East Kootenay in the Kitchener-Yahk-Moyie River areas where up to 30% of the foliage is affected in areas ranging in size from a few trees to 10 ha. Symptoms typical of this disease have also been found in parts of the "Driftwood Fire" west of Spillimacheen where 20 to 40% of the foliage is affected and in mature lodgepole pine stands along the Upper Kootenay and Lussier rivers. In the West Kootenay, heavy infections occurred on lodgepole and ponderosa pines in the Edgewood and Rock Creek areas.

Douglas-fir Pests

Douglas-fir tussock moth
Orgyia pseudotsugata

The areas of defoliated Douglas-fir stands increased significantly in 1982, with the largest infestations occurring in the Kamloops Region and smaller outbreaks in the Cariboo, Nelson and Vancouver regions.

A tenfold increase in area of infestations occurred in the Kamloops Region, with the heaviest feeding at Chase, Niskonlith, Pritchard, along Highway 97 between Vernon and Monte Creek, Barnhart Vale, North Kamloops, McLure, Cache Creek, Carquille, Ashcroft and Spences Bridge. Defoliation is lighter along Highway 3 from Keremeos to Princeton and in the Kelowna area. In the Pritchard-Monte Creek area where trees were completely defoliated in 1981, mortality of intermediate Douglas-fir trees is 60% or more. Several ground and aerial spray programs on private and public lands have had only limited success. However, initial data from post-spray studies on the Niskonlith Indian Reserve indicate 95% larval mortality.

In the Cariboo Region, tussock moth larval populations increased and are presently defoliating Douglas-fir along Scottie and Maiden creeks and along the south slope of Hart Ridge.

Moderate to severe defoliation occurred in a localized infestation at Christina Lake Golf Course. An aerial spray with orthene was apparently not successful in preventing defoliation.

In the Vancouver Region, moderate defoliation occurred in urban areas at Clearbrook-Abbotsford and the Chilliwack Golf Course.

Western budworm
Choristoneura occidentalis

Early budworm larval populations in the Vancouver Region were low, except at one locality. Infested bud counts on Douglas-fir at six localities in the Fraser River-Pemberton areas averaged 1%. At Gilt Creek in the Fraser Canyon, 15% of the buds were infested, which could result in some defoliation occurring in this area.

Moderate defoliation occurred in the Kamloops Region, namely west of Kamloops to Cache Creek, Bonaparte River, Oregon Jack Creek, Ashcroft and in the Marshall Creek-Goldbridge area west of Lillooet. In the South Okanagan, moderate defoliation was observed at Pimainus Creek and Anarchist Mountain.

In the Cariboo Region, larval populations increased, with up to 300 larvae per beating sample around Clinton. Defoliation to date is confined to current year's foliage, but it should become more noticeable before development is complete.

Rhizina root rot
Rhizina undulata

Seedling mortality occurred in a 40-ha Douglas-fir plantation planted in 1981 after a 1980 slash burn near Tony Lake in the Powell River area. In the area most intensely burned, 40% of the seedlings had died and *Rhizina*-fruiting bodies were plentiful.

Spruce Pests

Spruce beetle
Dendroctonus rufipennis

Continuing spruce beetle infestations in the interior of the province are indicated.

In the Bowron-Willow and McGregor drainages of the Prince George Region, overwintering brood mortality was minimal and the "R" value predictions indicate static to increasing populations. The 1982 beetle flight began in late May and peaked on June 10 and at this time the flight at Indian Point Creek in the Upper Bowron was heavy. Blowdown, which preferentially absorbs the beetles compared to green standing trees, has only been observed in the Naver-Willow area southeast of Prince George, where fringe blowdown has occurred along logging cutblocks and road right-of-ways. Trap trees felled at a number of locations have absorbed large numbers of beetles from the 1982 flight and should help to reduce beetle populations.

In the Cariboo Region, also, overwintering brood mortality was low near Ketchum Creek, Big Valley and Crescent Lake. The beetles were noted in flight on June 9 and attacks were beginning to occur on all available recent blowdown. Recent blowdown is evident along logging boundaries, but is not as prevalent throughout stands as in 1981. Near Bosk Lake east of Williams Lake, examination of infested leave blocks showed minimal overwintering mortality, although overwintering populations were lower in this area compared with infestations in the Quesnel District. Trap trees felled in all infested areas, if removed during 1982, should contribute to reduced beetle attacks in standing green trees.

In the Prince Rupert Region, overwintering brood mortality was low, except for some mortality of broods that developed to the pupal and teneral adult stage. A large beetle flight has occurred at lower elevations. Extensive trap tree programs in much of the Bulkley and Morice timber supply areas have absorbed high numbers of beetles.

In the Nelson Region, preliminary estimates indicate over 4 500 ha of active beetle infestations in the Revelstoke District at Pingston Creek, Tangier River and north of Revelstoke to Mica Creek. Overwintering brood mortality was low in the areas examined. In the East Kootenay, examinations at Kianuko and Kid creeks near Creston showed minimal overwintering mortality of brood.

Smaller infestations of spruce beetle which will be examined later in the field season have occurred in the Princeton, North Thompson and Lillooet areas of the Kamloops Region.

True Fir Pests

Two-year-cycle spruce budworm
Choristoneura biennis

Budworm populations and defoliation were generally lower than last year which is contrary to expectations, for normally the heaviest feeding by this defoliator is in even-numbered years.

Spruce budworm infestations in spruce-alpine fir stands in the Nass River area of the Prince Rupert Region declined in 1982. In early June, 8% of the white spruce and 3% of the alpine fir buds were infested. However, infestations that caused light defoliation in the Kispiox and Babine River areas in 1981 have expanded and intensified in 1982. Fifty percent of the buds were infested and larval collections were up considerably, averaging 420 larvae per beating sample. Later instar larvae are dropping onto the hemlock understory, causing top stripping.

Only low-level budworm populations occurred in the Bowron, Willow and Holmes drainages in the Prince George Region, averaging 4 to 5 larvae per sample. Defoliation was not apparent.

Infestations also declined in the Cariboo Region. Light defoliation of alpine fir on less than 100 ha occurred northwest of Crescent Lake. Bud examinations in the Bowron Lake-Barkerville area showed 1 to 5% of buds infested. Visible defoliation was not recorded in these areas.

Low budworm populations occurred with no defoliation apparent in previously defoliated spruce-alpine fir stands along the East Fork, White River and Lempriere Creek in the Nelson and Kamloops regions.

Hemlock Pests

Western hemlock looper
Lambdina f. lugubrosa

Hemlock looper larval populations which started to build up in 1981 showed a particularly large increase in 1982 in hemlock-cedar forests in the Revelstoke-Mica Creek area. However, defoliation was not readily apparent at the early larval stages occurring at the time of initial examination. Based on the number of larvae occurring in these areas, defoliation should increase as the season progresses.

At Coquitlam Lake in the Vancouver Region where severe defoliation of hemlock-cedar occurred in the late 1960's, there was a marked increase in larval numbers. The number of larvae in collections have fluctuated considerably in recent years but increased from two per sample in 1981 to more than 50 in 1982. Defoliation was not apparent as larvae were still in early development stages. Throughout the region surveyed, 29% of hemlock samples have contained looper larvae averaging 14 per sample.

In the Cariboo and Prince George regions, looper larvae are common at low levels in beating samples.

Larch Pests

Larch Casebearer
Coleophora laricella

Casebearer defoliation of western larch was further reduced from the low 1981 levels in the Nelson and Kamloops regions. Plots at Thrums, Fruitvale and Salmo averaged less than one casebearer per 50-cm branch sample. In the East Kootenay, minor defoliation occurred on individual trees in mixed coniferous stands between Wardner and Jaffray and on a few immature fringe trees at Rykerts.

In the Kamloops Region, a trace of defoliation was recorded at Shuttleworth Creek, Anarchist Summit and Cherryville.

Foliage diseases
Hypodermella laricis and *Meria laricis*

Needle browning and premature casting from these diseases declined from last year. Large areas of western larch affected in 1981 between Salmo and Trail and near Nancy Greene Park appear healthy with only trace infections by *Hypodermella* and none by *Meria*. At Stagleap Creek on the west side of the Salmo-Creston Summit, *Hypodermella* discolored more than 700 ha. Between Silverton and Slocan, 20% of the larch over 1 000 ha in mixed coniferous stands are infected with *Hypodermella*.

In the East Kootenay, *Hypodermella* infections caused moderate to severe discoloration in scattered 2- to 20-ha pockets between Yahk and Moyie Lake, and along the Moyie River. Along Gold Creek for 10 km, 20% of the foliage was affected on most of the immature larch.

Multiple-host Pests

Black army cutworm
Actebia fennica

Black army cutworm infestations occurred in several young plantations throughout British Columbia and on an agricultural site in the Yukon, usually on sites slash burned in 1979 and 1980. Damage to plantations has not yet been fully assessed.

More than 20 000 lodgepole pine seedlings were killed on 17 ha near Bobo Creek along the North Thompson River in the Kamloops Region. The site was slash burned in September 1980 and planted early June 1982. About half the seedlings were killed after being completely defoliated, including terminal bud destruction. An additional 25%, which were severely defoliated but retained the terminal buds, are not likely to survive. The balance of the seedlings were in a moist, flat creek bottom and sustained little or no feeding.

Cutworm infestations occurred in the Prince George Region near McLeod Lake, Willow River, and north of Fort St. James at Dog Creek and Kalder Lake. At Dog Creek, about half of the 25 000 planted lodgepole pine were killed or damaged. On June 29 at Stephanie Creek in the Willow River drainage, 95% of the cutworm were in the pupal stage. Duff samples contained 20 to 50 pupae per 930 cm^2. At Dog Creek, there were 5 to 20 pupae per sample. A large moth flight could occur in these areas in late July and August and infest surrounding recently burned areas.

Defoliation and leader destruction by cutworm occurred in the Prince Rupert Region on a 10-ha white spruce plantation along the Houston-Chapman Creek Road. High cutworm populations also existed at the south end of Babine Lake and along Natlin River and Cross and Guess creeks. Pupal counts were 25 per 930 cm^2 of duff sample at Cross Creek and 8 at Guess Creek, but 15% appeared diseased or parasitized.

Rabbit Damage

As in 1981, rabbit feeding continued to cause significant basal debarking of lodgepole pine in a spaced and fertilized trial 32 km west of Spillimacheen in the Nelson Region. Recent rabbit feeding (1982) was evident on 28% of the stems while either old or new damage was recorded on 54%.

Rabbit damage was common in regeneration lodgepole pine stands along the Alaska Highway in the Yukon. Heavy damage occurred north of Whitehorse along Lake Laberge and northwest of Carmacks. Damage to roadside trembling aspen was observed on the South Canol Road to Ross River and south along Lapie River.

Red Belt

Winter drying in conifer stands was common in the Prince George Region from Pine Pass to Chetwynd, north of Fort St. John to Pink Mountain, from Summit Lake to Fireside along the Alaska Highway and southeast of Vanderhoof. Lodgepole pine was most severely discolored with light to moderate damage of white spruce and alpine fir.

In the Yukon Territory, foliar browning was noted along the Alaska Highway from Kluane Lake to Beaver Creek.

Deciduous Pests

Winter moth
Operophtera brumata

Winter moth continued to defoliate deciduous trees in the Greater Victoria area. Generally, defoliation was lighter than in recent years, although pockets of severe defoliation did occur. Trees have now started to refoliate, which is masking the initial defoliation.

Preliminary surveys indicate that the released parasites are becoming established and should start affecting the infestation.

Surveys in the Lower Mainland and Fraser Valley failed to find any larvae or defoliation.

Western oak looper
Lambdina f. somniaria

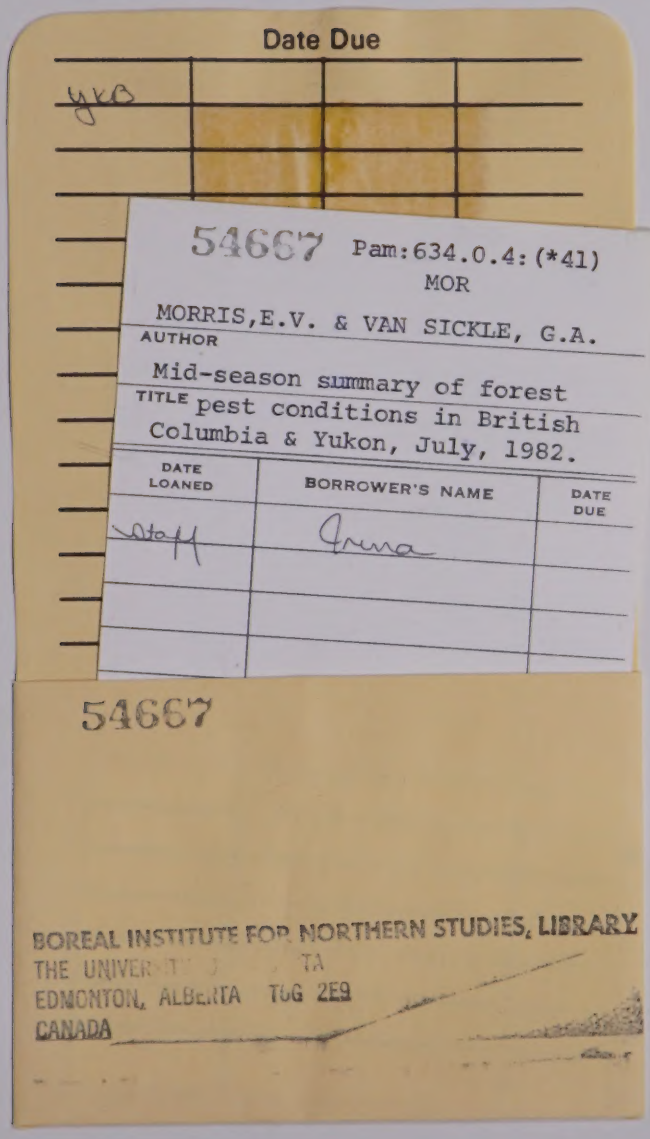
The oak looper infestation at the Mt. Maxwell Ecological Reserve on Salt Spring Island in the Vancouver Region continues to defoliate Garry oak and Douglas-fir for the third consecutive year on approximately 16 ha. Several Douglas-fir trees that had been severely defoliated were attacked by Douglas-fir bark beetles, which could result in some tree mortality.

Satin moth
Leucoma salicis

Scattered groves of pure trembling aspen and mixed stands have been lightly to severely defoliated from Anarchist Summit to Bridesville and in the Princeton area.

Conclusion

Currently active forest pests are numerous and include not only the bark beetles, defoliators and foliar diseases mentioned in this mid-season report but also root diseases, rusts, seed and cone pests, weevils, dwarf mistletoes, weather damage, etc. A more detailed fall report will include results of aerial surveys, further examinations of current damage and predictions for 1983.



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